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ABSTRACT

The hypothesis that boys are more stimulated than girls to high levels of motor activity by the presence of same-sex peers was examined by exposing preschoolers to a standardized setting under two conditions, alone and in triads. If true, the "contagion" effect would result in larger sex differences under the triad condition than under the alone condition. Sixty-nine preschoolers between 25 and 76 months of age were first oriented to a small, carpeted room with familiar toys. They were then randomly assigned to same-sex triads and, on different occasions with order of condition presentation counterbalanced, spent 10 minutes in the room in each condition. During the data collection phase of the study, multipurpose, sex-neutral toys were available in the room. Activity level was measured by actometers strapped to each child's dominant arm and opposite leg. Boys were found to be generally more active than girls, and there was a significant peer presence effect with more activity displayed in the Triad condition than in the Alone condition. The predicted sex by peer presence interaction, however, did not materialize. Boys were apparently not more responsive to the presence of peers than were girls. (Author/RH)

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Peer Presence and Sex Differences in Motor Activity Level

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The hypothesis that boys are more stimulated than girls to high levels of motor activity by the presence of same-sex peers was examined by exposing preschoolers to a standardized setting under two conditions, alone and in triads. If true, the "contagion" effect would result in larger sex differences under the triad condition than under the alone condition. Sixty-nine preschoolers between 25 and 76 months of age were first oriented to a small, carpeted room with familiar toys. They were then randomly assigned to same-sex triads and, on different occasions with order of condition presentation counterbalanced, spent ten minutes in the room in each condition. During the data collection phase of the study, multipurpose, sex-neutral toys were available in the room. Activity level was measured by actometers strapped to each child's dominant arm and opposite leg. Males were more active than females under both conditions, and children in triads were more active than children alone. No evidence for the hypothesized interaction was observed. The data suggest that boys, especially in same-sex peer groups, are more likely to exceed some implicit upper bound for appropriate levels of activity than are girls, and the contagion effect may be more a function of the observer's attention than a characteristic of children's behavior.

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Someone once observed that the only thing that boys wear out faster than shoes are parents and teachers. It's possible that boys are so wearing because they are very active motorically. Indeed, a common, though not unanimous, finding in the activity level literature is that boys display higher average levels of gross motor activity than do girls. Maccoby and Jacklin (1973) suggested that this difference results from differential responsiveness to the presence of same-sex peers, with boys being more stimulated than girls to high activity levels by such peers. The possibility that gross motor

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activity is more "contagious" among groups of boys than among similar groups of girls is very interesting because if such a contagion effect is operative, the tendency of children to play with same-sex peers would have the unanticipated consequence of magnifying sex differences in activity level. Boys, choosing other boys as playmates would, as a result of the choice and their greater responsiveness, be more active than girls choosing girls as playmates.

We have been unable to find a good test of this contagion hypothesis however. Studies using naturalistic observations have reported activity level sex differences for children playing in groups but not for children playing alone (Waldrop & Halverson, 1975; Melson, 1977). However these studies could not control for the possibility that situation was confounded with peer presence. Had boys and girls selected different situations as they chose to play alone or with peers, the observed sex by peer presence interaction would reflect situational influences rather than a sex-differentiated responsiveness to peer presence. For example, if boys congregated around a jungle gym and girls around art materials, we might see a sex by peer presence interaction, but not know to what to attribute it. A test of the contagion hypothesis requires a comparison of boys and girls' activity levels both alone and with same-sex peers under comparable conditions.

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One study which included such a comparison was done by Schwarz (1972) to see if the presence of a peer in an unfamiliar situation had a comforting effect on preschoolers. Children alone or with a peer were left in an unfamiliar room for five minutes and were scored for activity level as well as for some other variables. Activity was indexed by the number of floor squares entered during the 5-minute experimental session. Although Schwarz found that children were more active in the presence of a friend than when alone, he found no sex differences and no interaction between sex and peer presence. Unfortunately his measure of activity was somewhat insensitive because one of four toys in the playroom was very popular and two others were very unpopular. Since the toys were anchored near the walls of a square room, the popularity of the one toy undoubtedly discouraged movement across the room and attenuated activity scores. So, we can't be sure that the contagion hypothesis got a fair test in the Schwarz study.

We aimed to test the contagion hypothesis by exposing children to a standardized setting under two peer presence conditions, Alone and in Triads, with the expectation of finding an interaction reflecting greater activity level sex differences in the Triad condition than in the Alone condition.

The setting we used was a research trailer with a small, carpeted 8 by 12 foot room. Our measure of activity level was the total number of minutes logged on two actometers strapped to the child, one on an arm, the other on the opposite leg. An actometer is a self-winding wristwatch which has been modified so that movement of the watch, rather than winding the spring, moves the hands of the

watch; the more movement, the more minutes that elapse. Participants were 69 preschoolers between 25 and 76 months of age who attended two local day care centers.

Each child went to the playroom on three different occasions. First he or she went for a three-minute orientation session, and, upon entry, actometers were attached to one arm and leg. Once the watches were comfortably in place, the experimenter explained that he had to do some work in the next room and that he would return when the play time was over. For the orientation session, the playroom was stocked with familiar toys from the day care center; for the two experimental sessions which followed, these toys were replaced with multipurpose, toys like foam cubes and cardboard boxes. The latter two visits to the playroom also differed from the orientation session in that the child remained for nine minutes. In one condition the child was alone, and in the other, was with two randomly selected same-sex peers. Order of attendance in these two sessions was counterbalanced across the sample. Since the children came from common classrooms they were all well-known to each other.

Classroom teachers were asked to rank order the children with the instruction, "Kids vary in how physically active they are. Rank the kids in your room from the least active to the most active." Each child was ranked by four staff members and these rankings were averaged to form a composite ranking. On the basis of this composite, each child in a given triad was designated as the Low, Medium, or High Active member.

Since the behaviors of children playing together in a group are obviously interrelated, our basic unit of analysis had to be the triad, not the individual. Each triad member's overall activity score became one of the three measures for that triad, so we had three dependent variables, the activity score for the Low, the Medium, and the High active child respectively. And, of course, we had these scores for two conditions, once when each child of the triad was alone, and once when they were all together. We expected greater sex differences in activity when the children were together in triads than when they were alone.

The results are easy to summarize and are presented in Table 1 There was a significant sex effect with the boys being generally more active than the girls, and there was a significant peer presence effect with more activity displayed in the Triad condition than in the Alone condition. The predicted sex by peer presence interaction, however, did not materialize. Boys were apparently not more responsive to the presence of peers than were girls.

It can also be seen in Table 1 that teacher rankings were predictive of activity level in the experimental setting; the low-ranked children were the least active triad members and the high-ranked children, the most active, regardless of whether they were alone or in the presence of others.

Given our failure to find support for the contagion hypothesis, why, then, the strong perception on the part of adults that preschool boys playing together are more hazardous to one's equanimity than girls playing together? We offer two interpretations.

Table 1
Activity Score Means
(Log of Actometer minutes)

Effect	Group	Triad Member		
		Low Active	Medium Active	High Active
Sex *	Female	3.02	3.08	3.24
	Male	3.16	3.36	3.54
Condition **	Alone	2.85	3.01	3.18
	Triad	3.36	3.50	3.67
Sex by Condition	Female Alone	2.74	2.74	2.91
	Male Alone	2.92	3.18	3.36
	Female Triad	3.30	3.42	3.58
	Male Triad	3.40	3.55	3.73

* $p<.01$; ** $p<.0001$.

The first is a threshold interpretation which is based on Richard Bell's notion of implicit upper and lower bounds for desirable levels of behavior. Boys playing in groups represent the additive effects of both sex differences and peer presence effects and are more likely than girls to exceed the upper bound for desirable activity level. As a consequence, adult attention will be more frequently drawn to boys in groups.

A second interpretation would emphasize the qualitative differences in the play of boys and girls. An example of such a qualitative difference would be rough and tumble play (DiPietro, 1981). One would argue that some component of general activity level, like rough and tumble play, would show a sex by peer presence interaction even though overall activity level does not; perhaps adults are more influenced by the component than by a more global measure.

The larger question is whether or not sex differences in activity level result solely from the interaction of situations and such specific components of overall activity. For example, do the studies reporting sex differences in activity level happen to be the ones which, by chance or design, sample situations in which rough and tumble play or some other unspecified activity component is prominent? We can't answer that question with our results. However we can conclude that sex differences in our study were not a function of peer presence effects alone since sex differences were observed when the children were alone, as well as when they were in groups. Furthermore, there is no doubt that activity level is situationally influenced. In the context of our study, however, situation did not interact with sex as predicted by the contagion hypothesis.

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